Quant Mega Quiz for SSC Tier – 1 (Solutions)

S1. Ans.(d)

Sol.

$0.7 + \sqrt{0.16}$

➔ $0.7 + 0.4 = 1.1$

$1.02 - \frac{0.6}{24}$

➔ $1.02 + 0.025 = 0.995$

$1.2 \quad \times 0.83 = 0.996$

➔ $\sqrt{1.44} = 1.2$

Hence, the greatest number = $\sqrt{1.44}$

S2. Ans.(d)

Sol.

Let the required number of persons be x.

According to the question,

$2x^2 = 3042$

➔ $x^2 = 1521$

➔ $x = \sqrt{1521}$

➔ $x = 39$

S3. Ans.(c)

Sol. A product gets 0 at its end when,

(i) A multiple of 5 is multiplied by an even number or

(ii) A multiple of 10 is multiplied by any number.

All the given numbers are even and do not contain any multiple of 5. So, zeros at the end of the product will come only on multiplications by multiples of 10.

Multiples of 10 that lie in the given range from 2 to 100 are 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100.

Each of these multiples will yield one zero except 100 which will yield two zeros at the end of the product.

Total no. of zeros at the product

= 9 + 2 = 11

S4. Ans.(b)

Sol.

Let the original number of friends be x.

➔ ATQ, $\frac{108}{x-3} - \frac{108}{x} = 3$

➔ $108\left(\frac{x - x + 3}{x(x-3)}\right) = 3$

➔ $X(x-3) = 108$

➔ $x^2 - 3x - 108 = 0$

➔ $x^2 - 12x + 9x - 108 = 0$

➔ $(x - 12) + 9(x - 12) = 0$

➔ $(x - 12)(x + 9) = 0$

➔ $x = 12$ as $x \neq -9$

The number of friends who attended the picnic

$= 12 - 3 = 9$

S5. Ans.(b)

Sol.

Let the number be x.

According to the question,

$3 \times x^2 - 4 \times x = x + 50$

➔ $3x^2 - 5x - 50 = 0$

➔ $3x^2 - 15x + 10x - 50 = 0$

➔ $3x(x - 5) + 10(x - 5) = 0$

➔ $(x - 5)(3x - 10) = 0$

➔ $x = 5$ or $\frac{-10}{3}$

But the number is natural. So, $x \neq \frac{-10}{3}$

Hence, the required number = 5.

S6. Ans.(a)

Sol.

Let,

No. of rice bowl = x

no. of dal bowl = y

no. of paneer bowl = z

Then, x + y + z = 65 ....(1)

Also given that, 2x = 3y = 4z

Substituting value of y & z in terms of x i.e. y = 2x/3 and z = x/2 in eq (1),

We get x = 30.

As 1 rice bowl is shared between 2 guests,

Therefore, there are 60 guests.

S7. Ans.(c)

Sol.

Smallest number of 6 digits is 100000
On dividing 100000 by 111 we get 100 as remainder
Number to be added = (111 -100) = 11
Required Number = 100011

S8. Ans.(c)

Sol.

$(\frac{2+1}{2})\ (\frac{3+1}{3})\ (\frac{4+1}{4})\ldots\ldots\ (\frac{120+1}{120})$

$= \frac{3}{2} * \frac{4}{3} * \frac{5}{4} * \ldots\ldots \frac{121}{120}$
$= \frac{121}{2} = 60.5$

S9. Ans.(b)

Sol.

Let the numbers be 3x, 3x + 3 and 3x + 6
➔ ATQ, 3x + 3x + 3 + 3x + 6 = 72
➔ 9x + 9 = 72
➔ 9x = 72 – 9 = 63
➔ x = 7

So, Largest number
= 3x + 6
= 3 × 7 + 6 = 27

S10. Ans.(d)

Sol.

Ten's digit = x
Unit's digit = $2x - 1$

➔ Original number
= $10x + (2x - 1)$
= $12x - 1$

New number = $10\ (2x - 1) + x$
➔ $20x - 10 + x$
➔ $21x - 10$

➔ $(21x - 10) - (12x + 1) = 12x - 1 - 20$
➔ $9x - 9 = 12x - 21$
➔ $3x = 12$ Þ $x = 4$

Original number = $12x - 1$
➔ 12 × 4 – 1 = 47
[You can also check through options].

S11. Ans.(b)

Sol.

Since, (12-8) = (18-14) = (36-32) = (45-41) = 4

We, need to find the L.C.M. of 12,18,36,45 and subtract 4 from it to get the required answer.

➔ L.C.M. of 12, 18, 36 and 45 = 180

➔ 180 – 4 = 176

S12. Ans.(d)

Sol.

Let the number be N.

➔ N = 3a -1 = 7b-1 = 11c – 1

Or N+1 is divisible by all 3, 7, and 11...

The smallest number which is divisible by 3, 7, and 11 is LCM (3, 7, 11) = 231

So, N+1 = 231 or N = 23...

Thus, C is the correct answer....

S13. Ans.(c)

Sol. Let the number be x based on the given information, x can be represented as 253a+128.

X/23 = (253a+128)/23 = (11a + 5) + 13/23

Therefore, the remained when the number is divided by 23 is 13

Or

Just divide the given remainder with new divisor. You will get new remainder.

i.e. $\frac{128}{23}$ gives remainder 13

S14. Ans.(a)

Sol.

Let the two numbers be x and (x + 3)

➔ ATQ, $x^2 + (x + 3)^2 = 369$

➔ $2x^2 + 6x - 360 = 0$

➔ $x^2 + 3x - 180 = 0$

➔ (x + 15) (x – 12) = 0

The numbers are positive, x = 12, Therefore, the given numbers are 12 and 15

Therefore, sum of the numbers is (12+15) = 27

S15. Ans.(d)

Sol. Among the numbers from 100 to 200:

1 in hundred's place is present in 100 numbers

1 in ten's place is present in 10 numbers

1 in unit's place is present in 10 numbers...

Thus the total number of one's used = 100+10+10 = 120.

S16. Ans.(d)

Sol.

$7^1 = 7$; $7^2 = 49$; $7^3 = 343$;
$7^4 = 2401$; $7^5 = 16807$

i.e. The unit's digit repeats itself after power 4.
Remainder after we divide 245 by 4 = 1

➔Unit's digit in the product of
➔ $(4387)^{245} \times (621)^{72}$
➔ Unit's digit in the product of $(4387)^1 \times (621)^{72}$
➔ $7 \times 1 = 7$

S17. Ans.(c)

Sol.

Unit digit of $(251)^{193} = 1$ (any power of 1 gives 1 at unit digit)
➔ Unit digit of $(161)^{97} = 1$ (any power of 1 gives 1 at unit digit)
➔ Unit digit of $(196)^{101} = 6$ (any power of 6 gives 6 at unit digit)
➔ Unit digit of $(1005)^{345} = 5$ (any power of 5 gives 5 at unit digit)
➔ Unit digit of $36^4 = 6$ (any power of 6 gives 6 at unit digit)
➔ Unit digit of $349 = 9$
So, required answer = $1 + 1 - 6 + 5 - 6 + 9 = 16 - 12 = 4$

S18. Ans.(b)

Sol.

Let the number be x.
According to the question,

➔ $\frac{3x}{4} - \frac{x}{6} = 7$

➔ $\frac{9x - 2x}{12} = 7$

➔ $x = 12$

So, $\frac{5x}{3} = \frac{5}{3} * 12 = 20$

S19. Ans.(c)

Sol.

$\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \ldots\ldots + \frac{1}{132}$

➔ $\frac{1}{4*5} + \frac{1}{5*6} + \frac{1}{6*7} + \ldots + \frac{1}{11*12}$

➔ $\frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \ldots\ldots + \frac{1}{11} - \frac{1}{12}$

➔ $\frac{1}{4} - \frac{1}{12} = \frac{1}{6}$

S20. Ans.(b)

Sol.

Let the denominator be x

So, numerator be x - 4

Original fraction = $\frac{x-4}{x}$

➔ ATQ,

➔ $8(x - 4 - 2) = x + 1$

➔ $8x - 48 = x + 1$

➔ $7x = 49$

➔ $x = 7$

Original fraction

➔ $\frac{7-4}{7} = \frac{3}{7}$

S21. Ans.(a)

Sol.

First part = x and second part = $94 - x$

➔ $\frac{\frac{x}{5}}{\frac{94-x}{8}} = \frac{3}{4}$

➔ $\frac{x}{5} * \frac{8}{94-x} = \frac{3}{4}$

➔ $47x = 15 * 94$

➔ $x = 30$

S22. Ans.(b)

Sol.

Mean proportional = $\sqrt{ab}$

➔ $\sqrt{(3+\sqrt{2})\,(12-\sqrt{32})}$

➔ $\sqrt{(3+\sqrt{2})\;4(3-\sqrt{2})}$

➔ $2\sqrt{9-2}$

➔ $2\sqrt{7}$

S23. Ans.(d)

Sol.

Boys: Girls = 4: 3 = 32: 24

Girls: Teachers = 8: 1 = 24: 3

➔ Boys: Girls: Teachers = 32: 24: 3

➔ Required ratio (Student: teacher)

= (32 + 24): 3 = 56: 3

S24. Ans.(a)

Sol.

$$\frac{(x^3 - y^3)}{(x^2 + xy + y^2)} = \frac{5}{1}$$

➔ $\frac{(x - y)(x^2 + xy + y^2)}{(x^2 + xy + y^2)} = \frac{5}{1}$

➔ x – y = 5 ....(i)

Again,

➔ $\frac{(x^2 - y^2)}{x - y} = \frac{7}{1}$

➔ $\frac{(x - y)(x + y)}{x - y} = 7$

➔ x + y = 7 ....(ii)

On solving eq. (i) and (ii) we get,

X = 6, y = 1

➔ So, required ratio $\frac{2x}{3y} = \frac{2*6}{3*1} = \frac{4}{1}$

S25. Ans.(d)

Sol.

Successful students = $\frac{9}{11} \times 132 = 108$

Unsuccessful students = $\frac{2}{11} \times 132 = 24$

When 4 more students succeed,

Required ratio = (108 + 4): (24 – 4)

➔ 112: 20 = 28: 5

S26. Ans.(b)

Sol. Let the number ot be added be z.

➔ $\frac{x+z}{y+z} = \frac{p}{q}$

➔ qx + qz = py + pz

➔ zp - zq = qx − py

➔ $z = \frac{qx - py}{p - q}$

S27. Ans.(a)

Sol. 5 years ago, let the age of father = 2x years (let)

Then, Age of son = x years

➔ ATQ, $2x + 5 + x + 5 = 100$

➔ $3x = 100 - 10 = 90$

➔ $x = 30$

Father's present age

$= 2x + 5 = 60 + 5 = 65$ years

Son's present age $= x + 5 = 30 + 5 = 35$ years.

After 10 years,

Ratio $= \frac{65+10}{35+10} = \frac{75}{45} = \frac{5}{3}$

S28. Ans.(c)

Sol.

Let the numbers be $3x$ and $4x$.

Their HCF $= x = 15$

➔ Sum of numbers $= 3x + 4x = 7x$

$= 15 \times 7 = 105$

S29. Ans.(d)

Sol. Let the original number of students be $2x$, $3x$ and $4x$ in three class.

According to the question,

➔ $\frac{2x+12}{3x+12} = \frac{8}{11}$

➔ $24x + 96 = 22x + 132$

➔ $2x = 132 - 96 = 36$

➔ $x = 18$

So, Original number of students

$= 2x + 3x + 4x$

$= 9x = 9 \times 18 = 162$

S30. Ans.(d)

Sol.

According to the question,

Sum of remaining two numbers = 11 × 36 − 9 × 34

= 396 − 306 = 90

Ratio of the remaining two numbers = 2: 3

➔ Smaller number = $\frac{2}{5}$ × 90 = 36